



REMARKS

The Office Action mailed March 10, 2006 has been reviewed and carefully considered. Claims 1-19 remain pending, claims 1 and 11 remaining the independent claims. The claims are deemed to be already in proper form, so no changes are made. Reconsideration of the above-identified application in view of the following remarks is respectfully requested.

Claims 1-19 stand rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 4,790,615 to Seki et al. ("Seki").

Claim 1 recites:

a reflector having a reflective groove formed by a photolithography process . . . the reflective groove disposed at one end surface of the bidirectional optical communication module and coupled to a connection waveguide, a reflective layer formed on a base surface of the reflective groove

Seki fails to disclose the above-quoted aspect of the present claim 1.

Item 2 of the Office Action incorrectly suggests the Seki groove 30B is disposed at one end, i.e., side 11, of an optical communication module.

Seki discloses a filter 40B fitted against side wall surfaces of a groove 30B.

The groove 30B is exposed on end surfaces such as surfaces 11, 12.

Notably,

- 1) the groove 30B is extended, as is the end surface 11; and
- 2) the groove 30B is perpendicular to the end surface 11.

In conclusion, one end of the groove 30B is disposed at end surface 11 and the opposite end of the groove is disposed at the opposite end surface 12.

It is incorrect to say that the Seki groove 30B is "disposed at one end surface."

The claim construction offered by the Office Action cannot be sustained.

Secondly, it is not clear in what sense the Office Action suggests that one or the other side wall of the groove 30B is properly characterized as a "base surface." It is unclear, for example, if the other groove 30A, by the same reasoning, is deemed likewise to have its own "base surface." In that event, it is further unclear how a module has two bases at opposite ends.

If, on the other hand, the Office Action is suggesting that the Seki substrate 10 is the base surface, Seki lacks disclosure or suggestion that the Seki filter 40B is "on" the base surface. In particular, the Seki filter is fitted between the side walls of the groove. The groove base "is located under the lower end of the optical waveguide" (col. 3, lines 61-63), but Seki is silent as to how far under. Although Seki discloses that the filter 40B is fitted in the groove (col. 3, lines 60-61; col. 4, lines 15-16), Seki fails to disclose or suggest that the groove base supports the filter. Accordingly, Seki lacks disclosure or suggestion of ". . . a reflective layer formed on a base surface of the reflective groove. . ."

Thirdly, although Seki discloses that optical paths 60, 67 are formed using photolithography (col. 7, lines 7-16), Seki fails to disclose or suggest that the groove 30B is formed by photolithography. Seki uses, instead, a relatively less precise method, i.e., a dicing saw (col. 4, line 42) in forming the groove 30. Dicing is less precise than photolithography (see instant specification, page 10, line 18 to page 11, line 20). Seki fails to disclose or suggest use of photolithography to form a groove.

Claim 1 recites, ". . . a reflector having a reflective groove formed by a photolithography process. . ." The mention of the word "photolithography" in the claim 1 language ". . . reflective groove formed by a photolithography process. . . a reflective layer formed on a base surface of the reflective groove . . ." is a structural limitation.

Item 12 of the Office Action incorrectly takes issue with this, and suggests that the word "photolithography" in claim 1 lacks patentable weight.

A product-by-process claim, which is a product claim that defines the claimed product in terms of the process by which it is made, is proper. *In re Luck*, 476 F.2d 650, 177 USPQ 523 (CCPA 1973); *In re Pilkington*, 411 F.2d 1345, 162 USPQ 145 (CCPA 1969) (MPEP 2173.05(p)(I)). The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g., *In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (MPEP 2113).

The instant applicants submit that the use of photolithography in forming the novel reflective groove imparts "distinctive structural characteristics" (see instant specification, e.g., page 3, lines 14-18; page 8, lines 7-10; page 7, lines 8-10; page 10, line 18 - page 11, line 20; page 13, line 14 - page 14, line 1), at least because use of photolithography yields a final product in conformance with tighter tolerances.

By contrast, as mentioned above, Seki uses a relatively less precise method, i.e., a dicing saw (col. 4, line 42) in forming the groove 30.

By, *inter alia*, failing to accord patentable weight to the word "photolithography" in claim 1, the Office Action arrives at an invalid ground of rejection.

For at least all of the above reasons, Seki fails to anticipate the present invention as recited in claim 1.

Reconsideration and withdrawal of the rejection is respectfully requested.

Also, at least since the Seki multiplexing optical circuit is merely a component of an optical communication module, the Seki circuit is designed differently from the present invention. The above analysis breaks down the fiction, proffered by the Office Action, of comparing the Seki multiplexer to the instant optical communication module.

For at least the above reasons, it would, in addition, not have been obvious to modify Seki to resemble the present invention as recited in claim 1.

Claim 11 recites, ". . . the reflective layer is formed on a base surface formed in a reflective groove formed by a photolithography process such that the groove is disposed at one end surface of the bidirectional optical communication module and coupled to a connection waveguide."

Claim 11 is deemed to distinguish patentably over Seki for at least the same reasons set forth above with regard to claim 1.

Reconsideration and withdrawal of the rejection is respectfully requested.

Claim 9 depends from claim 1 and is deemed to be patentable at least due to its dependency.

In addition, claim 9 recites, ". . . a substrate made of silicon or polymer; and a cladding layer stacked on the substrate. . ."

To the best understanding of the instant applicants, the Office Action suggests that optical waveguide 20 is the "cladding layer" of the present claim 9.

One of ordinary skill in the art, however, would not have understood the waveguide 20 to constitute a cladding layer. Nor is the waveguide 20 "stacked."

Claim 9 is another example of how the fiction of comparing the Seki multiplexer to the instant optical communication module breaks down.

Claims 2-5, 7, 8, 12, 13 and 15-18 stand rejected under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 4,790,615 to Seki et al. ("Seki").

Each of these claims depends from a respective base claim that has been shown to be patentable over Seki and is deemed to likewise be patentable at least due to its dependency.

Claim 6 stands rejected under 35 U.S.C. 103(a) as unpatentable over Seki in view of U.S. Patent Publication No. 2002/0048431 to Kimura.

Claim 6 depends from claim 1, and Kimura cannot make up for the shortcomings of Seki.

In addition, claim 6 recites, ". . . the reflective layer is a metal layer. . .," whereas Seki, the primary reference, relates to partially reflective filters.

The Office Action first offers that Seki discloses a bandpass filter to be made from titanium. The Office Action apparently suggests that, since titanium can exist in metal form, perhaps there is a "metal layer."

However, Seki discloses the use of titanium merely in the context of bandpass filter containing TiO₂ (col. 7, line 66). The latter is not a metal (col. 5, line 16):

The Office Action secondly offers that Kimura discloses a dielectric filter, but a dielectric is not metal.

The Office Action thirdly offers apparently unsupported statements about various metals purportedly existing in dielectric filters, the Office Action seeming to suggest, or entertain the idea of, the existence of "a metal layer." The Office Action fails to cite to any reference or other authority.

It is unclear to the instant applicants what the Office Action is suggesting in referring to various metal layers in an optical filter. For example, it is unclear how the metallic property could serve the filtering function.

Since Official Notice has not properly been given, no need exists to traverse such notice. The current applicants, nevertheless, traverse any improper notice.

Finally, to the applicants' best understanding, the Office Action fails to cite motivation for replacing the Seki filter of about 23 layers (col. 4, line 19; col. 6, lines 26-27), some of titanium oxide, with the Kimura filter. It is further unclear where such motivation is to be found in the references and in what was generally known to those of ordinary skill in the art.

For at least the above reasons, the applied references, alone or in combination, fail to disclose or suggest ". . . the reflective layer is a metal layer. . ."

Claim 6 is a further example of how the fiction of comparing the Seki multiplexer to the instant optical communication module breaks down.

For at least these reasons, the instant ground of rejection lacks validity.

Notably, the Office Action cites a U.S. patent publication organized by page number and paragraph, and then cites to passages by column and line number. It is accordingly unclear to where in Kimura the Office Action is citing.

Claims 10 and 19 stand rejected under 35 U.S.C. 103(a) as unpatentable over Seki in view of U.S. Patent No. 6,480,647 to Kitamura.

Claim 10 depends from claim 9, and Kitamura cannot compensate for the deficiencies in Seki.

Claim 19 depends from claim 11, and Kitamura cannot compensate for the deficiencies in Seki.


For at least the above reasons, claims 10 and 19 are deemed to distinguish patentably over the references the Office Action cites.

Moreover, each dependent claim warrants further consideration based on its additional, particular merits.

For all the foregoing reasons, it is respectfully submitted that all of the present claims are patentable in view of the cited reference. A Notice of Allowance is respectfully requested.

Respectfully submitted,

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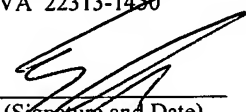
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